

**AGENDA ITEM REQUEST**

for Proposed State Implementation Plan (SIP) Revision 2007 JUL -6 AM 9: 29

AGENDA REQUESTED: July 25, 2007

CHIEF CLERKS OFFICE

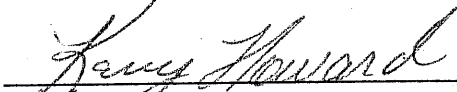
DATE OF REQUEST: July 6, 2007

NAME & NUMBER OF PERSON TO CONTACT REGARDING CHANGES  
TO THIS REQUEST, IF NEEDED: Kerry Howard, 239-0556

CAPTION: Docket No. 2007- 0692-SIP. Consideration for publication of, and hearing on, proposed revisions to the maintenance plan for the El Paso County nonattainment area state implementation plan for the control of carbon monoxide (CO) air pollution. On January 11, 2006, the Commission adopted a SIP revision that included a request for redesignation from CO nonattainment to attainment and included a full maintenance plan. The proposed revisions adjust the term of the maintenance plan from a horizon year of 2015 to 2020, add a safety margin, and revise the motor vehicle emissions budget and emissions projections. (Ita Ufot, Terry Salem) (Project No. 2007-014-SIP-NR).



Chief Engineer

Division Director *for**Susana M. Hildebrand*

Agenda Coordinator

Copy to CCC Secretary? NO X YES



# Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

**To:** Commissioners **Date:** July 6, 2007  
**Thru:** LaDonna Castañuela, Chief Clerk  
Glenn Shankle, Executive Director  
**From:** David C. Schanbacher, P.E., Chief Engineer *DCS*  
**Docket No.:** 2007-0692-SIP  
**Subject:** Commission Approval for Proposal of the Revised El Paso Maintenance Plan for Carbon Monoxide (CO)  
Project No. 2007-014-SIP-NR

## Reason for the SIP revision:

In January 2006, the TCEQ submitted a carbon monoxide (CO) Redesignation Request and Maintenance Demonstration State Implementation Plan (SIP) for El Paso to the EPA. The EPA published a direct final approval on January 23, 2007. However, before the comment period closed the EPA received adverse comments and EPA withdrew its final approval on March 26, 2007 (72 FR 14043).

In the meantime, at the request of the local Metropolitan Planning Organization (MPO) and because El Paso's CO monitoring data showed that the design value was stable below 85 percent of the National Ambient Air Quality Standard (NAAQS), the TCEQ, with concurrence from EPA Region 6, proposed a limited maintenance plan (LMP) on January 10, 2007. The LMP was to replace the maintenance plan (MP) submitted to EPA on January 20, 2006. During the public comment period, EPA Region 6 commented that per discussion with EPA headquarters, the LMP cannot be used during the first 10 years of a CO maintenance period for areas classified as moderate nonattainment. EPA also commented that the CO emissions inventory and motor vehicle emissions budget (MVEB) should include a projected horizon year of at least 10 years after EPA redesignates an area to attainment. As a result of EPA's comments, the commission did not take final action on the LMP. This proposed revised maintenance plan would replace the maintenance plan submitted in January 2006. The revised maintenance plan amends the previously submitted CO redesignation request, and EPA is expected to process this SIP revision as part of the redesignation request and to make its findings on the request and revised maintenance plan concurrently.

## What the SIP Revision will do:

The proposed action will ensure that the area remains in attainment of the CO standard, clarify the use of on-board diagnostics testing as a control measure, and include emissions projections to horizon year 2020. This revision would replace the MP that was part of the CO Redesignation Request and Maintenance Demonstration SIP that was adopted and submitted in January 2006. This revision would include a commitment to submit a second 10 year maintenance plan in eight years as required by EPA, i.e., two years before the end of the first 10 year maintenance plan period. This revision will also apply a safety margin to make the motor vehicle emissions budget less constraining.

## Statutory authority:

The authority to propose and adopt this SIP revision is derived from the Texas Health and Safety Code, Texas Clean Air Act (TCAA), §382.002, which provides that the policy and purpose of the TCAA is to safeguard the state's air resources from pollution; TCAA, §382.011, which authorizes the commission to control the quality of the state's air; and §382.012, which authorizes the commission to prepare and develop a general, comprehensive plan for the control of the state's air.

Commissioners

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Re: Docket No. 2007 - 0692 - SIP

The Federal Clean Air Act (FCAA), 42 U.S.C., §7401, *et seq.*, requires states to submit SIP revisions that specify the manner in which the NAAQS will be achieved and maintained within each air quality control region of the state. Section 175A of the FCAA (42 U.S.C., §7505a) requires areas seeking redesignation to attainment to amend the SIP to include a plan for maintenance of the NAAQS for the pollutant for which redesignation is sought.

**Effect on the:**

**Regulated community:**

None.

**Public:**

No impact on the public.

**Agency programs:**

None expected.

**Controversial issues:**

None expected.

**Legislative interest:**

None expected.

**Stakeholder involvement:**

No

**Proposed schedule:**

Anticipated proposal date: July 25, 2007

Public hearing date: September 5, 2007 in El Paso

Anticipated adoption date: January 2008

Submission to EPA: February 2008

Commissioners

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Re: Docket No. 2007 - 0692 - SIP

**Agency contacts:**

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**Attachments**

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REVISIONS TO THE STATE IMPLEMENTATION PLAN (SIP)  
FOR THE CONTROL OF CARBON MONOXIDE AIR POLLUTION

EL PASO REVISED MAINTENANCE PLAN FOR CARBON MONOXIDE

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
P. O. BOX 13087  
AUSTIN, TEXAS 78711-3087

PROJECT NUMBER  
2007-014-SIP-NR

Proposed on  
July 25, 2007





## SECTION VI. CONTROL STRATEGY

A. Introduction (No change.)

B. Ozone (No change.)

1. *Dallas-Fort Worth* (No change.)
2. *Houston-Galveston* (No change.)
3. *Beaumont-Port Arthur* (No change.)
4. *El Paso* (No change.)
5. *Regional Strategies* (No change.)
6. *Northeast Texas* (No change.)

C. Particulate Matter (No change.)

D. Carbon Monoxide (Revised.)

1. *El Paso* (Revised.)

E. Lead (No change.)

F. Oxides of Nitrogen (No change.)

G. Sulfur Dioxide (No change.)

H. Conformity with the National Ambient Air Quality Standards (No change.)

I. Site Specific (No change.)

J. Mobile Sources Strategies (No change.)

K. Clean Air Interstate Rule (No change.)



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- 2.4 Non-road Mobile Sources
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**EL PASO CARBON MONOXIDE REVISED MAINTENANCE PLAN  
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C	El Paso County Redesignation Mobile Source Emissions Inventory Documentation
D	EPA Letter Approving the El Paso Modeling Protocol
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## **EL PASO CARBON MONOXIDE REVISED MAINTENANCE PLAN**

### **LIST OF ACRONYMS**

CAL3QHC – California Line Model version 3 with Queing component for Hot Spot calculations  
CAMS - Continuous Air Monitoring System  
CAMx - Comprehensive Air Quality Model with Extensions  
CHIEF - Clearinghouse for Inventories & Emissions Factors  
CMAQ – Congestion Mitigation and Air Quality Improvement Program  
CO - carbon monoxide  
CO<sub>2</sub> - carbon dioxide  
CST - Central Standard Time  
DLC - Diagnostic Link Connector  
DPS - Texas Department of Public Safety  
EDMS - Emissions and Dispersion Modeling System  
EGAS - Economic Growth Analysis System  
EGU - electric generating unit  
EI - emissions inventory  
EIQ - emissions inventory questionnaires  
EPA - Environmental Protection Agency  
ERG - Eastern Research Group  
ETBE - ethyl tertiary butyl ether  
ETI - Emission Trends Inventory  
FCAA - Federal Clean Air Act  
FMVECP - Federal Motor Vehicle Emission Control Program  
GloBEIS - Global Biogenic Emissions Inventory System  
HAP - hazardous air pollutant  
HPMS - Highway Performance Monitoring System  
FR - Federal Register  
IH – Interstate Highway  
I/M – Inspection and Maintenance Program  
LIRAP - Low Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program  
LMP – Limited Maintenance Plan  
MP – Maintenance Plan  
MPO - Metropolitan Planning Organization  
m/sec - meters per second  
MSA - Metropolitan Statistical Area  
MTBE - methyl tertiary butyl ether  
MVEB - Motor Vehicle Emissions Budget  
NAAQS - National Ambient Air Quality Standard  
NEI - National Emissions Inventory  
NNEM - National Non-road Emissions Model  
NO<sub>x</sub> - nitrogen oxides  
OBD - On-Board Diagnostic  
PM<sub>10</sub> - particulate matter 10 microns or less  
ppb - parts per billion  
ppm - parts per million  
PSDB - Point Source Database

**EL PASO CARBON MONOXIDE REVISED MAINTENANCE PLAN**  
**LIST OF ACRONYMS CONTINUED**

PTE - potential to emit  
RAM - Regional Air Model  
REMI - Regional Economic Models, Incorporated  
RVP - Reid Vapor Pressure  
SIP - State Implementation Plan  
SO<sub>2</sub> - sulfur dioxide  
SO<sub>x</sub> - sulfur oxides  
STARS - State of Texas Air Reporting System  
TAME - tertiary amyl methyl ether  
TCEQ - Texas Commission on Environmental Quality (formerly the TNRCC)  
TIPI - Texas Industrial Production Index  
TNRCC - Texas Natural Resource Conservation Commission (renamed the TCEQ)  
tpd - tons per day  
tpy - tons per year  
TSI - Two-Speed Idle  
TTI - Texas Transportation Institute  
UAM - urban airshed model  
VMT - vehicle miles traveled  
VOC - volatile organic compounds

## EXECUTIVE SUMMARY

El Paso, Texas, was designated nonattainment in 1990 for the carbon monoxide (CO) standard and classified as "moderate" nonattainment under §107(d)(4)(A) and §186(a) of the Federal Clean Air Act (FCAA). The El Paso CO nonattainment area is restricted to a narrow strip of the city of El Paso along the Rio Grande, in El Paso County, adjacent to Ciudad Juarez, Mexico. El Paso is eligible for redesignation to attainment for the eight-hour CO national ambient air quality standard (NAAQS) because there have been no monitored violations of the eight-hour standard since 2001. All areas in Texas comply with the one-hour standard.

In January 2006, the TCEQ submitted a CO Redesignation Request and Maintenance Demonstration SIP to the EPA. EPA published a direct final approval on January 23, 2007. However, before the comment period closed the EPA received adverse comments and EPA withdrew its final approval on March 26, 2007 (72 FR 14043).

In the meantime, at the request of the local Metropolitan Planning Organization (MPO) and because El Paso's CO monitoring data showed that the design value was stable below 85 percent of the standard, the TCEQ, with concurrence from EPA Region 6, proposed a limited maintenance plan (LMP) on January 10, 2007. The LMP was to replace the maintenance plan (MP) submitted to EPA on January 20, 2006. During the public comment period, EPA Region 6 commented that per discussion with EPA headquarters, the LMP cannot be used during the first 10 years of a CO maintenance period for areas classified as moderate nonattainment. EPA also commented that the CO emissions inventory and motor vehicle emissions budget (MVEB) should include a projected horizon year of at least 10 years after EPA redesignates an area to attainment. As a result of EPA's comments, the commission did not take final action on the LMP and has developed a revised maintenance plan to replace the maintenance plan submitted in January 2006. The revised maintenance plan amends the previously submitted CO redesignation request. EPA is expected to process this SIP revision as part of the redesignation request and to make its findings on the request and maintenance plan concurrently.

The revised maintenance plan will ensure that the area remains in attainment of the CO standard, clarify the use of on-board diagnostics (OBD) testing in the vehicle inspection/maintenance (I/M) as a control measure, and include emissions projections to 2020. This revision also applies a safety margin to make the motor vehicle emissions budget (MVEB) less constraining.

This maintenance plan compares the baseline emissions inventory (EI) (2002 seasonal) to projected periodic EIs through the year 2020, taking into consideration the point sources, area sources, non-road mobile, and on-road mobile sources. The year 2002 is used because it is the base year for the El Paso CO redesignation request.

Control strategies in this plan include federal emission standards, oxygenated fuel requirements, and the I/M program. In this plan the TCEQ commits to maintain appropriate air monitoring equipment. This SIP revision also contains a contingency plan that will be implemented should exceedences of the eight-hour CO NAAQS unexpectedly occur.



## **CHAPTER 1: GENERAL INFORMATION**

### **1.1 PURPOSE OF PLAN**

The purpose of this State Implementation Plan (SIP) revision is to update the maintenance plan pending with the United States Environmental Protection Agency (EPA). In January 2006, the Texas Commission on Environmental Quality (TCEQ) submitted a Carbon monoxide (CO) Redesignation Request and Maintenance Plan for El Paso to the EPA. The EPA published a proposed direct final approval on January 23, 2007. However, before the comment period closed the EPA received adverse comments and withdrew its final approval on March 26, 2007 (72 FR 14043). Because El Paso qualified for a Limited Maintenance Plan (LMP) in 2006, the TCEQ, with concurrence from EPA Region 6, proposed an LMP on January 10, 2007. The LMP was to replace the maintenance plan submitted on January 20, 2006. Based on the comments and recommendations the TCEQ received from the EPA on February 20, 2007, the TCEQ is submitting this SIP revision to replace the maintenance plan submitted in January 2006. This revision addresses issues raised by the EPA in the February 20, 2007, correspondence. This plan also includes revisions to the motor vehicle emissions budget (MVEB) and applies a safety margin. This revision includes a commitment to submit a second 10-year maintenance plan in eight years as required by the EPA, i.e., two years before the end of the first 10-year maintenance plan period. This plan also ensures that the area remains in attainment of the CO standard and demonstrates maintenance through the horizon year 2020.

### **1.2 BACKGROUND**

#### **1.2.1 Introduction**

CO is a colorless, odorless, poisonous gas that reduces the ability of the blood to carry oxygen to vital tissues, affecting the cardiovascular and nervous systems. Low concentrations can adversely affect individuals with heart disease and can decrease exercise performance in young, healthy persons.

CO results from the incomplete combustion of carbon-containing compounds such as wood, coal, and liquid and gaseous fuels. Its formation is enhanced when the supply of oxygen is inadequate for the complete oxidation of fuels to carbon dioxide (CO<sub>2</sub>). Modeling shows that most CO emissions in El Paso result from the incomplete combustion of gasoline by motor vehicles. Optimal combustion of gasoline occurs in warmer ambient temperatures because fuel combustion and pollution control equipment are more efficient at warmer temperatures. During the winter months, vehicles may produce excess CO emissions due to cold starts and longer warm-up periods. Due to its geography, El Paso is prone to strong temperature inversions, resulting in a low atmospheric mixing height and poor dispersion of pollutants.

The national ambient air quality standard (NAAQS) for CO is 9 parts per million (ppm) for an eight-hour average concentration. A violation occurs when there is greater than one exceedance in any one calendar year (40 Code of Federal Regulations (CFR) §50.8). According to a June 18, 1990, EPA memorandum, Ozone and Carbon Monoxide Design Value Calculations, from William G. Laxton, the CO NAAQS requires that not more than one eight-hour average per year can exceed 9 ppm (greater than or equal to 9.5 ppm to adjust for rounding). See Appendix A: *EPA Memorandum, 'Ozone and Carbon Monoxide Design Value Calculations,' June 18, 1990.*

#### **1.2.2 History**

El Paso, Texas, was designated nonattainment in 1990 for the eight-hour CO standard and classified as being in moderate nonattainment under §107(d)(4)(A) and §186(a) of the FCAA (42 U.S.C. §§ 7407(d)(4)(a) and 7512(a)). The El Paso CO nonattainment area is restricted to a narrow strip along the Rio

Grande, adjacent to Ciudad Juarez, Mexico.

The FCAA requires that CO nonattainment areas designated moderate and above demonstrate attainment through air quality modeling or any other analytical method determined by the EPA to be at least as effective. Section 179B of the FCAA contains special provisions for nonattainment areas that are affected by emissions emanating from outside the United States. Under §179B, the EPA will approve a SIP if the area meets all other FCAA requirements and establishes that implementation of the plan would achieve attainment of the CO standard by the FCAA statutory deadline "but for emissions emanating from outside of the United States."

Texas submitted a revision to the Texas SIP for the El Paso CO moderate nonattainment area via a letter dated September 27, 1995, which was supplemented in February 1998. This submittal included air quality modeling, under §179B of the FCAA, demonstrating that El Paso would attain the CO NAAQS but for emissions emanating from outside of the United States.

El Paso and Juarez, Mexico, share an airshed. However, EI data were not available for Juarez, so modeling the entire airshed was not possible. In such an instance, §179B allows an area such as El Paso to perform modeling using only United States pollutant emissions data in conducting the attainment demonstration.

Texas performed CO modeling analysis for El Paso according to the EPA's guidance using conservative inputs to EPA guideline models. In the demonstration, Texas used two models, the Regional Air Model (RAM) and CAL3QHC. The CAL3QHC model has components based upon the California Line Model version 3 (CAL3), which calculates dispersion from line sources (sources uniformly distributed along a line segment such as a highway). CAL3QHC also has a queuing component (Q) for hot spot calculations (HC). The RAM was used to estimate background CO concentrations, and CAL3QHC was used to estimate hot-spot concentrations or those areas that are the most likely to produce the highest concentrations of CO. Using RAM modeling, Texas identified the worst-case meteorological episode conducive for CO concentration. This episode was subsequently used in the CAL3QHC modeling to determine CO concentrations at six selected intersections in the nonattainment area. These concentrations were then combined with hourly variables in the eight-hour period with the highest RAM-determined background CO concentration.

There have been no monitored violations of the CO eight-hour standard since 2001. In January 2006, the TCEQ submitted a CO Redesignation Request and Maintenance Demonstration SIP to the EPA. The EPA published a direct final approval on January 23, 2007. However, before the comment period closed the EPA received adverse comments and withdrew its direct final approval on March 26, 2007 (72 FR 14043).

Because El Paso's CO monitoring data showed that the design value was stable below 85 percent of the standard, the TCEQ, with concurrence from EPA Region 6, proposed a LMP on January 10, 2007. The LMP was to replace the maintenance plan submitted to EPA on January 20, 2006. During the public comment period, EPA Region 6 commented that per discussion with EPA headquarters, the LMP cannot be used during the first ten years of a CO maintenance period for areas classified as moderate nonattainment. The EPA also commented that the CO emissions inventory and MVEB should include a projected horizon year of at least ten years after the date that EPA redesignates an area to attainment. As a result of the EPA's comments, the TCEQ did not take final action on the LMP and has developed a revised MP to replace the MP submitted in January 2006.

### 1.2.3. Revised Maintenance Plan (MP)

This proposed revised MP demonstrates that El Paso will remain in attainment of the CO standard for at least ten years after the EPA approves the plan. This revision includes a commitment to submit a second 10-year maintenance plan in eight years, i.e., two years before the end of the first 10-year maintenance plan period. The revised MP submitted will ensure that the area remains in attainment of the CO standard, clarifies the use of OBD in the I/M program as a control measure as requested in the EPA's comment, and includes emissions projections to a horizon year beyond 2015 as suggested by the EPA. This revision also applies a safety margin to the MVEB.

### 1.3 PUBLIC HEARING INFORMATION

The commission will hold a public hearing to consider this revision of the Texas State Implementation Plan and to solicit public comment. The hearing will be held at the following time and location:

City	Date	Time	Location
El Paso	September 5, 2007	1.30 p.m.	Texas Commission on Environmental Quality Region 6 401 E. Franklin Ave., Ste. 560 El Paso, Texas

A question and answer session will be held 30 minutes prior to the hearing. Written comments will be accepted via mail, fax, or through the eComments system. Electronic comments may be submitted at <http://www5.tceq.state.tx.us/rules/ecomments/>. File size restrictions may apply to comments being submitted via the eComments system. All comments should reference the "El Paso CO Revised Maintenance Plan" and Project Number 2007-014-SIP-NR. The comment period will close on September 7, 2007. Written comments must be submitted to the TCEQ by this date.

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### 1.4 SOCIAL AND ECONOMIC CONSIDERATIONS

Because rulemaking was not a part of this SIP revision, there are no changes that would require an analysis of social and economic considerations.

### 1.5 FISCAL AND MANPOWER RESOURCES

The state has determined that its fiscal and manpower resources are adequate and will not be adversely affected through the implementation of this plan.





## CHAPTER 2: EMISSIONS INVENTORY

### 2.1 OVERVIEW

The 1990 Federal Clean Air Act (FCAA) Amendments require that emissions inventories (EI) for all source categories be prepared for CO nonattainment areas. The Consolidated Emissions Reporting Rule (67 FR 39602, June 10, 2002) provides detailed requirements for developing these EIs. To meet these requirements, the TCEQ must compile information on the important sources of CO emissions. The total CO EI for an area is summarized from the estimates developed for the five general categories of emission sources: stationary point, area, on-road mobile, and non-road mobile. The EI includes the source types present in the designated area, the amount of CO emitted on an annual as well as a daily basis, and the types of processes and control devices employed at each industrial site or for each area and mobile source category.

The EI provides data for a variety of air quality planning tasks for SIP development purposes, including establishing baseline emission levels, calculating reduction targets, control strategy development for achieving the required emission reductions, emission inputs into air quality simulation models, and tracking actual emission reductions against the established emissions growth and control budgets.

EIs also provide a way to demonstrate that attainment of the CO standard in El Paso County will be maintained. The year 2002 was selected as the base year for the El Paso CO attainment demonstration and redesignation request. Table 2-1: *El Paso County CO 2002 Baseline Emissions Inventory* depicts El Paso County emissions in 2002 by source type in tons per day (tpd).

**Table 2-1: El Paso County CO 2002 Baseline Emissions Inventory**

Point (tpd)	Area (tpd)	Non-road Mobile (tpd)	On-road Mobile (tpd)	Totals (tpd)
4.67	16.42	45.90	360.34	427.33

This maintenance demonstration consists of a comparison between the baseline EI (2002 seasonal) and the projected EI through the year 2020 taking into consideration growth in vehicles miles traveled (VMT), economic growth, and population growth. The total inventory of CO emissions for an area is summarized from the estimates developed for four general categories of emissions sources, each explained below.

### 2.2 POINT SOURCES

The commission requires EIs from accounts that meet any one of the several reporting requirements outlined in 30 Texas Administrative Code (TAC) §101.10, which are discussed below. An account (site) may be required to submit an EI for any of the following reasons (§101.10).

- The account meets the definition of a major source, 30 TAC §116.12. For a moderate CO nonattainment area, a major source emits or has the potential to emit (PTE) 100 tpy of CO.
- The account emits or has the PTE 100 tpy of any criteria pollutant, regardless of attainment status of the area.
- The account emits or has the PTE at least 10 tpy of any single hazardous air pollutant (HAP) or 25 tpy of aggregate HAPs.

To collect emissions and industrial process operating data, emissions inventory questionnaires (EIQs) are mailed to all accounts in the state identified as having met any one of the reporting requirements of 30

TAC §101.10. Companies are required to report not only emissions data for all emissions-generating units and emission points, but also the amount of materials used in emissions-generating processes for a representative sample of sources. The EIQ also collects information on process equipment descriptions, operation schedules, emissions control devices currently in use, abatement device control efficiency, and stack parameters such as location, height, and exhaust gas flow rate. All data submitted via the EIQ are then subjected to quality assurance procedures and entered into the State of Texas Air Reporting System (STARS).

The 2002 CO season EI data obtained from STARS comprised the base year used for growing point source emissions to the appropriate future years. Point source CO projections for the year 2020 were developed using the August 2005, Texas Industrial Production Index (TIPI)-derived factors, where available, and supplemented with Economic Growth Analysis System (EGAS) 4.0 factors, where necessary. According to the Federal Reserve Bank of Dallas, the TIPI is a value-added index based on a weighted average of employment, worked hours, and some production data. The underlying process to derive TIPI data is the same as the Bureau of Economic Analysis Gross State Product. A better surrogate would have been local survey data based on production; however, the 2020 emissions inventory production data was not available for the SIP. Therefore, the growth factors were used to develop the 2020 point source emissions inventory. For further information on the TIPI see <http://www.dallasfed.org/data/data/mi5000.tab.htm>.

The TIPI was used, where possible, because its data are more recent than those in the EGAS 4.0 model. For those categories in the Texas EI not covered by the TIPI, EGAS 4.0 factors were used. The EGAS model was last updated on January 26, 2001, and uses data and data models that date from the early 1980s to 1999. The Regional Economic Models, Incorporated (REMI) model, which is the economic basis of EGAS 4.0, uses economic data from 1969 to 1996. Also, EGAS uses historical emissions data from the National Emissions Inventory (NEI) ranging from 1972 to 1992. (See the EGAS 4.0 Reference Manual, available on EPA's Clearinghouse for Inventories and Emissions Factors (CHIEF) website at [www.epa.gov/ttn/chief](http://www.epa.gov/ttn/chief).)

Point source CO emissions (Table 2-6: *El Paso County CO Emission Inventory Baseline 2002 and Projection*) are expected to increase by 9.9 percent due to increases in population and economic activity, between 2002 and 2020. Details of the El Paso County 2002 Base Year point source EI for CO may be found in Appendix B: *El Paso County Area, Non-road Mobile, and Point Source Emissions Inventory Detail*.

## **2.3 AREA SOURCES**

To capture information about sources of emissions that fall below the point source reporting levels and are too numerous or too small to identify individually, emissions from these sources are estimated on a source category or group basis. Area sources include commercial, small-scale industrial, and residential categories of sources that use materials or operate processes that can generate emissions. Area sources can be divided into two groups characterized by the emission mechanism: hydrocarbon evaporative emissions or fuel combustion emissions. Examples of sources of evaporative losses include printing, industrial coatings, degreasing solvents, house paints, leaking underground storage tanks, gasoline service station underground tank filling, and vehicle refueling operations. Fuel combustion sources include stationary source fossil fuel combustion at residences and businesses, as well as outdoor burning, structural fires, and wildfires. These emissions, with some exceptions, are estimated by multiplication of an EPA-established emissions factor (emissions per unit of activity) times the appropriate activity or activity surrogate responsible for generating emissions. Population is the most commonly used activity surrogate for many area source categories, while other activity data include amount of gasoline sold in an area, employment by industry.

type, and acres of cropland.

The 2002 CO season EI data obtained from Texas Air Emissions Repository compose the base year inventory used for growing area source emissions to the appropriate future years. After reviewing EGAS 4.0, REMI EGAS (an older version of EGAS but updated with local economic factors), and the Emission Trends Inventory (ETI), the TCEQ determined that the variations among the three are minimal. Because the EGAS 4.0 factors are considered the most accurate, these factors were used for the bulk of the forecasting. The projected EIs were compiled by using EGAS growth factors for each area source category, as the standard and accepted method for developing future year EIs. The EGAS contains individual growth factors for each category for each forecasting year. There were exceptions to the use of EGAS 4.0 for growing emissions. For fireplaces, ETI data were used to project growth for 2005 to 2008. However, for the years 2011, 2015, and 2020, EGAS 4.0 applied growth factors were used for the same categories.

Area source CO emissions (Table 2-6: *El Paso County CO Emissions Inventory Baseline 2002 and Projection 2020*) are expected to increase by 16.3 percent, due to increases in population and economic activity between 2002 and 2020. Details of the El Paso County 2002 Base Year point source EI for CO may be found in Appendix B: *El Paso County Area, Non-road Mobile, and Point Source Emissions Inventory Detail*.

## **2.4 NON-ROAD MOBILE SOURCES**

This category includes aircraft operations, railroad locomotives, and a broad range of non-road equipment that includes 600-horsepower engines mounted on construction equipment to 1-horsepower string trimmers. Calculation methods for emissions from non-road engine sources are based on information about equipment population, engine horsepower, load factor, emission factor, and annual usage. The EPA's NON-ROAD model is used to calculate emissions from all non-road mobile categories except aircraft, airport ground support equipment, and locomotives. The Emissions and Dispersion Modeling System (EDMS) model is used to calculate aircraft emissions. Emissions data from airport ground support equipment and locomotives were developed by consultants conducting surveys of equipment populations and usage as well as collecting other relevant activity data associated with these categories.

For the categories not included in the NON-ROAD model (aircraft, airport ground support equipment, and Locomotives), the 2002 Periodic Emissions Inventory was projected grown to 2020 using EGAS 4.0 growth factors. For all the categories that have emissions data developed by the NON-ROAD model, the model was run for the selected future years to generate those emissions projections. Non-road source CO emissions (Table 2-6: *El Paso County CO Emissions Inventory Baseline 2002 and Projection 2020*) are expected to increase by 38.9 percent due to increases in population and economic activity between 2002 and 2020. Details of the El Paso County 2002 base year point source EI for CO may be found in Appendix B: *El Paso County Area, Non-road Mobile, and Point Source Emissions Inventory Detail*.

## **2.5 ON-ROAD MOBILE SOURCES**

On-road mobile sources consist of automobiles, trucks, motorcycles, and other motor vehicles traveling on public roadways. Combustion-related emissions are estimated for vehicle engine exhaust, and evaporative hydrocarbon emissions are estimated for the fuel tank and other evaporative leak sources on the vehicle. Emission factors have been developed using the newest version of the EPA's mobile emission factor model, MOBILE6.2. Various inputs are provided to the model to simulate the vehicle fleet driving in each particular nonattainment area. Inputs include such parameters as vehicle speeds by roadway type, vehicle registration by vehicle type and age, percentage of vehicles in cold-start mode, percentage of miles traveled by vehicle type, type of I/M program in place, and gasoline vapor pressure. All of these inputs

have an impact on the emission factor calculated by the MOBILE6.2 model, and every effort is made to input parameters reflecting local conditions. To complete the emissions estimate, the emission factors calculated by the MOBILE6.2 model must then be multiplied by the vehicle miles traveled (VMT). The level of vehicle travel activity is developed from travel demand models. The travel demand models have been validated against a large number of ground counts of traffic passing over counters placed in various locations throughout the county. Estimates of VMT are often calibrated to outputs from the Federal Highway Performance Monitoring System, which is a model built from a smaller number of traffic counters. Finally, roadway speeds, which are required for the MOBILE6.2 model's input, are calculated by a post-processor to the travel demand model.

Estimates for on-road mobile emissions sources (Table 2-6: *El Paso County CO Emissions Inventory Baseline 2002 and Projection 2020*) predict a significant decrease in CO emissions in both the El Paso County area (36.1percent) and the El Paso CO nonattainment area (46.3 percent) between 2002 and 2020. Tables 2-3: *Summary of El Paso On-road Control Implementation Date*, and 2-4: *Summary of Control Measures for El Paso County and El Paso CO Nonattainment Area for Analysis Years 2002 and 2020*, summarize the control program implementation schedule and the use of control programs to estimate emission rates. The decrease in emissions due to control programs will occur despite an increase in the activity level as measured by VMT for 2002 and 2020. The VMT information is shown in Table 2-5: *Summary of VMT for El Paso County and El Paso CO Nonattainment Area for Analysis Years 2002 and 2020*.

The El Paso on-road mobile source EI was developed under contract by the Texas Transportation Institute (TTI). The TTI project is documented in Appendix C: *El Paso County Redesignation Mobile Source Emissions Inventory Documentation*. The report provides detailed information on development of the on-road mobile CO emissions inventories. The report includes: a summary of the CO inventory, development information for the MOBILE input values, inventory development information, and a list of electronic files that include the MOBILE input files, MOBILE output files, and inventory summary output files.

**Table 2-2: Summary of El Paso On-road CO Emissions for 2002 Base Year and 2020**

<b>Year</b>	<b>El Paso County Area</b>	<b>El Paso CO Nonattainment Area</b>
2002	360.34	29.66
2020	230.26	15.94

**Table 2-3: Summary of El Paso On-road Control Implementation Date**

Control Measure	Year of Implementation
I/M - Single Speed test and Gas Cap (GC) check	1986
Modified to TSI and GC check	1987
I/M - Modified to OBD	2007
Tier 1 federal motor vehicle control program (FMVCP)	1994
Oxygenated Fuel	1994
Tier 2 FMVCP	2004

**Table 2-4: Summary of Control Measures for El Paso County and El Paso CO Nonattainment Area for Analysis Years 2002 and 2020**

Control Description	El Paso County Area		El Paso CO Nonattainment Area	
	2002	2020	2002	2020
I/M: TSI	X		X	
I/M: GC	X	X	X	X
I/M: OBD		X		X
Tier 1 FMVCP	X	X	X	X
Oxy Fuel	X	X	X	X
Tier 2 FMVCP		X		X

**Table 2-5: Summary of VMT for El Paso County and El Paso CO Nonattainment Area for Analysis Years 2002 and 2020**

Year	El Paso County Area	El Paso CO Nonattainment Area
2002	13,963,365.4 <sup>1</sup> miles per day(mpd)	1,120,547.1 <sup>2</sup> mpd
2020	22,770,391.7 <sup>1</sup> Mpd	1,571,241.3 <sup>2</sup> mpd

Note: 1. Summarized and documented in Appendix A  
2. Development is documented in Appendix A. Values are documented in the corresponding electronic files and are available upon request.

## 2.6 EMISSIONS INVENTORY SUMMARY

Table 2-6: *El Paso County CO Emission Inventory Baseline 2002 and Projection 2020*, summarizes the base year and projected CO season emissions inventories for El Paso County. The initial year, 2002 (chosen as the baseline year), had approximately 427 tpd total CO emissions. The future year demonstrates a decreasing total inventory, compared to the baseline inventory, for El Paso County.

**Table 2-6: El Paso County CO Emissions Inventory Baseline 2002 and Projection 2020**

Year	Point Source (tpd)	Area (tpd)	Non-road Mobile (tpd)	On-road Mobile (tpd)	Total (tpd)
2002	4.67	16.42	45.90	360.34	427.33
2020	5.13	19.10	63.77	230.26	318.26

## 2.7 MOTOR VEHICLE EMISSIONS BUDGET (MVEB)

This maintenance plan establishes a revised motor vehicle emissions budget (MVEB) for the year 2020, the last year of the maintenance period and contains a safety margin. The budget is the maximum allowable emissions from on-road mobile sources for each applicable criteria pollutant or precursor, in this case, CO. Nonattainment and maintenance areas must demonstrate that estimated emissions from transportation plans, programs, and projects will not exceed the MVEB, according to the federal transportation conformity rule. Because a MVEB is set only for the last year of the plan, the area must also provide a qualitative analysis during its conformity determination as required by 40 CFR §93.118(b)(2)(i).

EPA requires that the MVEB be based on the CO nonattainment area. Appendix C: *El Paso County Redesignation Mobile Source Emissions Inventory Documentation*, summarizes the El Paso County 24-hour CO season weekday emissions inventory estimates for 2002 and 2020 analysis years. Emissions were also estimated for the El Paso CO nonattainment area (an area much smaller than the county) and were included in the tabular emissions summary files provided in the electronic data submittal. Using that data set, the TCEQ calculated the El Paso CO nonattainment area MVEB, and applied a safety margin, which is permissible by the EPA under 40 CFR 893.12U (2), as depicted in Table 2-7: *CO On-road Mobile Source Emissions for El Paso CO Nonattainment Area*.

**Table 2-7: The Motor Vehicle Emissions Budget with Safety Margin**

Year	CO (tpd)
2020	29.66

### 2.7.1 SAFETY MARGIN

A safety margin is the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for attainment, 40 CFR 93.101. Also 40 CFR 93.124 (a) allows the safety margin to be allocated to the transportation sector for conformity purposes. As shown in the emissions inventories earlier in this plan, the 2020 total emissions inventories for CO are below the level necessary to demonstrate continued maintenance of the CO standard (which is 427.33

tpd). As a result, the TCEQ may allocate some or all of the “safety margin” to the MVEB for transportation conformity purposes, according to the federal transportation conformity rule. The TCEQ in conjunction with interagency consultation partners, including the El Paso MPO, has allocated to the budget only the on-road mobile emissions inventory portion of the safety margin. The total safety margin available is the difference between baseline year emissions inventories and the projected year emissions inventories. Table 2-8: *Safety Margin* demonstrates the provision for a safety margin that ensures that the CO attainment in El Paso will be maintained.

***Table 2-8: Safety Margin***

<b>Description</b>	<b>CO (tpd)</b>
Baseline 2002 on-road emissions inventory (EI) – the attainment year (See Table 2-2)	29.66
Future year 2020 on-road EI (See Table 2-2)	15.94
On-road EI available for safety margin (2002 minus 2020)	13.72
2020 MVEB with safety margin	29.66





## **CHAPTER 3: ATTAINMENT OF THE CARBON MONOXIDE STANDARD**

### **3.1 NATIONAL AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE**

The current NAAQS for CO is 9 ppm for the eight-hour average, and 35 ppm for the one-hour average. The El Paso area is designated nonattainment for the eight-hour CO standard.

The EPA requires an area to have two consecutive calendar years of complete, quality-assured monitoring data with no violations before the area can be redesignated attainment for the CO standard. The attainment demonstration must be based on representative air monitoring data collected with approved measuring instruments and procedures and with adequate quality assurance and quality control.

No monitor in an area requesting redesignation can have more than one eight-hour average concentration exceeding 9 ppm during either of the two most recent quality assured calendar years. The rounding convention in the NAAQS specifies that values less than 9.5 ppm do not exceed the standard, whereas concentrations of 9.5 ppm or greater do exceed the standard.

### **3.2 CLEAN AIR ACT CONDITIONS FOR REDESIGNATION**

Section 107(d)(3)(E) of the FCAA states that the EPA can redesignate an area to attainment if the following conditions are met

- A. The area has attained the applicable NAAQS;
- B. The area has a fully approved SIP under §110(k) of the FCAA and the area meets all the relevant requirements under §110 and part D of the FCAA;
- C. The air quality improvement is permanent and enforceable; and
- D. The area has a fully approved maintenance plan under §175A of the FCAA.

### **3.3 HAS THE AREA ATTAINED THE NAAQS?**

This plan is based on quality-assured air quality data. Table 3-1: *El Paso County CO Monitors With Eight-Hour Readings Greater than NAAQS 1999-2005*, shows that the CO standard was not violated from 2002 through 2005. Two different monitors in 2000 each recorded one reading greater than 9.5 ppm, but because these readings were at two different monitors, no violation occurred. In 2001, one monitor had a reading greater than 9.5 ppm but because there was only one high reading, no violation occurred. There were no readings in El Paso greater than 9.5 ppm after 2001, and there were no high readings from 2004 through 2005. Figure 3-1: *El Paso County CO Monitor Locations* depicts the locations of El Paso County's CO monitoring system. Figure 3-2: *Eight-Hour CO Design Value for El Paso 1998-2005* shows the declining trend in design value from 2002 through 2005. There is no record of any exceedance of the one-hour CO standard in the El Paso area.

**Table 3-1: El Paso County CO Monitors With Eight-Hour Readings Greater Than NAAQS 1999-2005**

<b>8-Hr CO Standard</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
<b>CAMS # &amp; Monitor Location</b>	<b>Number of readings &gt; NAAQS</b>	<b>Number of readings &gt; NAAQS</b>	<b>Number of readings &gt; NAAQS</b>	<b>Number of readings &gt; NAAQS</b>	<b>Number of readings &gt; NAAQS</b>	<b>Number of readings &gt; NAAQS</b>	<b>Number of readings &gt; NAAQS</b>
<b>C49 Socorro</b>	None	None	None	None	None	None	None
<b>C12 UTEP</b>	None	None	None	None	None	None	None
<b>C37 Ascarate Park</b>	None	1	None	None	None	None	None
<b>C40 Sun Metro</b>	None	1	1	None	None	None	None
<b>C41 Chamizal</b>	None	None	None	None	None	None	None
<b>C-413 Tillman</b>	None	None	None	None	None	None	None
<b>C414 Ivanhoe</b>	None	None	None	None	None	None	None
<b>C72 Skyline Park</b>	None	None	None	None	None	None	None

**Figure 3-1: El Paso County CO Monitor Locations**

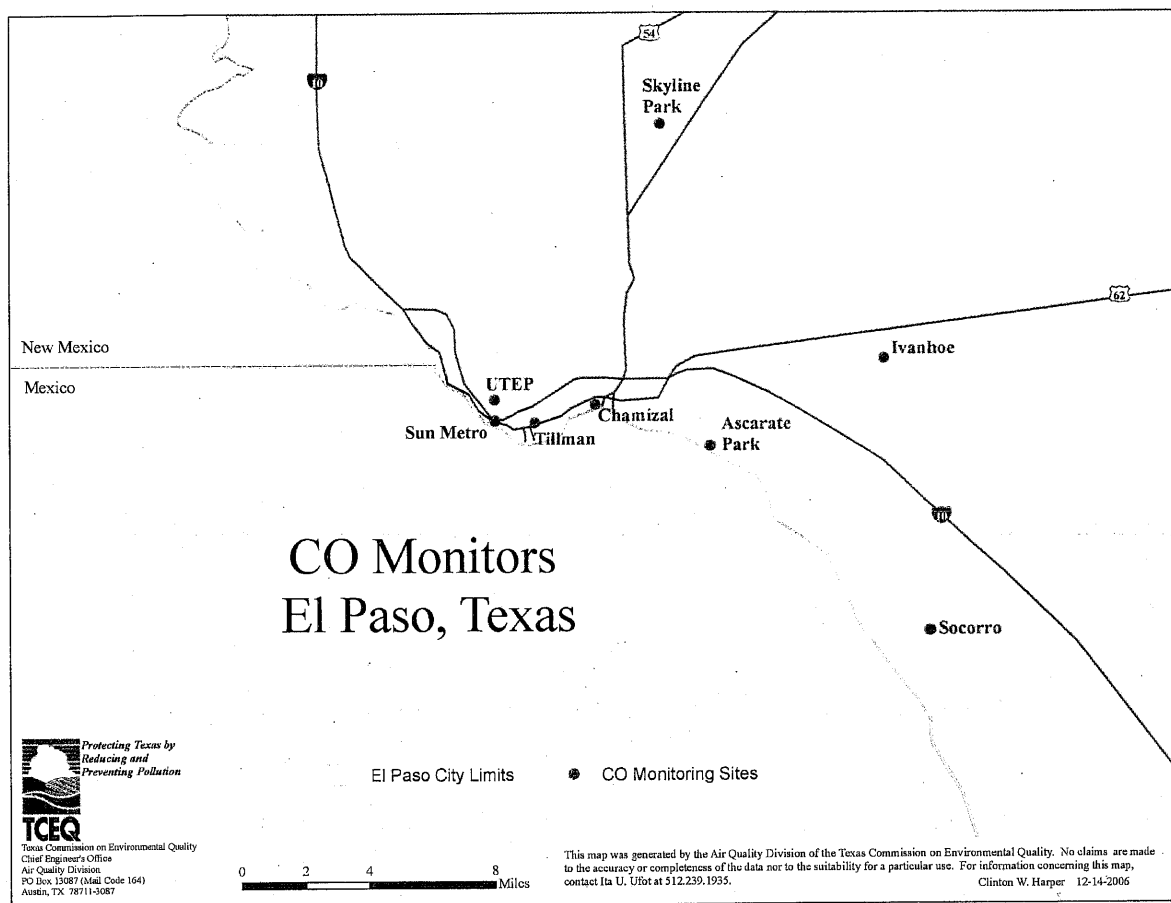
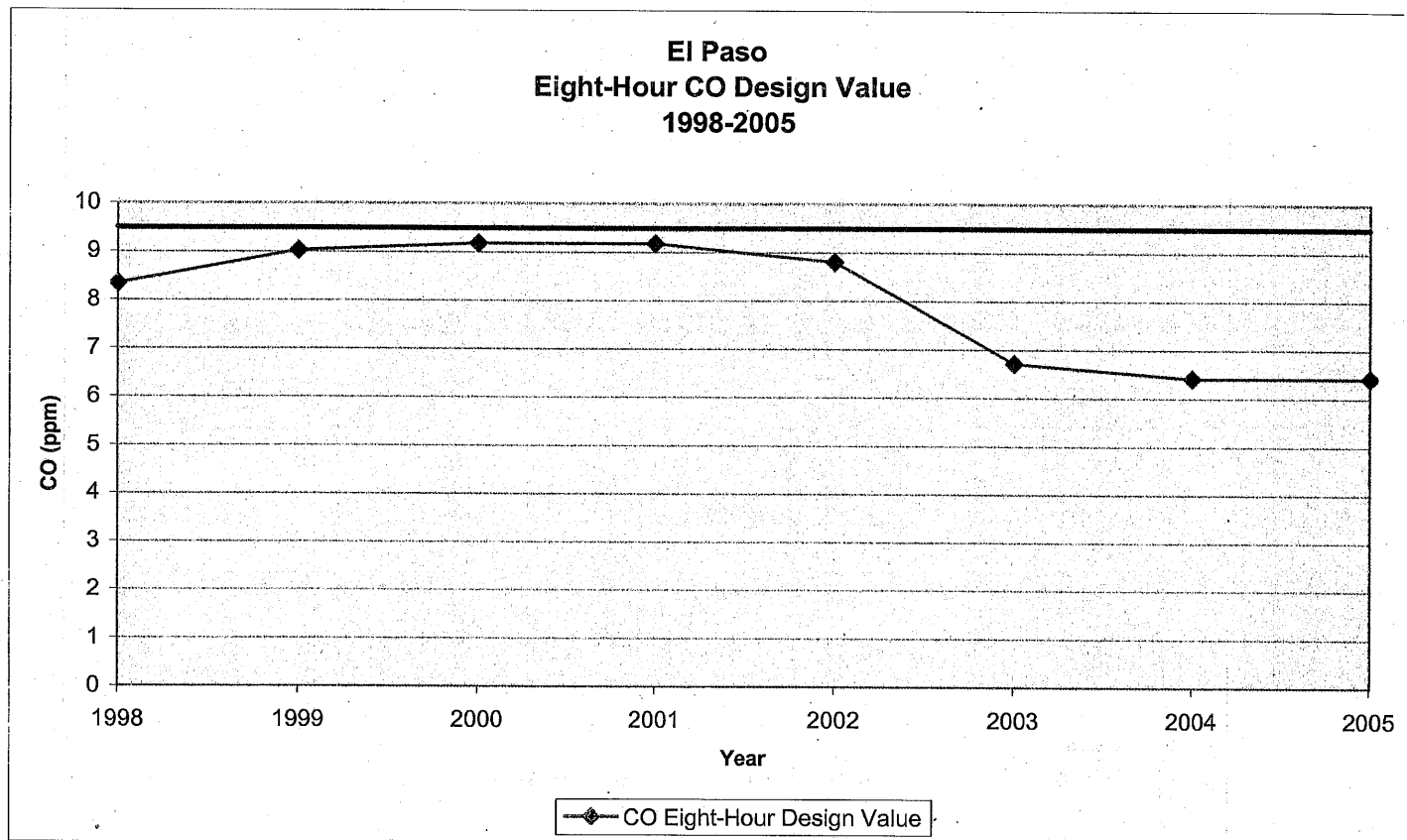


Figure 3-1: *El Paso County Monitor Locations*, shows the map of the El Paso area and the locations of the CO monitors.

**Figure 3-2: Eight-Hour CO Design Value for El Paso 1998-2005**



### **3.4 DOES THE AREA HAVE A FULLY APPROVED SIP?**

The EPA approved, effective September 2, 2003 (68 FR 39457 on July 2, 2003), through direct final action, a revision to the Texas SIP consisting of a demonstration of the CO NAAQS in the El Paso CO nonattainment area (but for emissions emanating from outside of the United States). EPA also approved the El Paso area's CO motor vehicle emissions budget and a CO contingency measure requirement. The state submitted the revisions to satisfy §179B and other Part D requirements of the FCAA.

### **3.5 ARE THE IMPROVEMENTS IN AIR QUALITY PERMANENT AND ENFORCEABLE?**

Improvement in ambient CO concentrations in the El Paso nonattainment area can be attributed to emissions reductions that are permanent and enforceable. The area meets the national standard for CO as the result of the implemented federal, state, and local controls.

The population of the City of El Paso increased by 6.2 percent from 2000 to 2005, growing from 563,662 to 598,590, while the county population increased by 8.04 percent increasing from 679,622 to 736,310 from 2000 to 2006 (Source: U.S. Census Bureau, estimates). Ciudad Juarez, Mexico, the sister city of El Paso, had a population increase of 9.6 percent, growing from 1,142,354 in 2000 to 1,301,452 in 2005 (<http://www.citypopulation.de/Mexico.html>). During this same time period, the CO design value decreased from 9 ppm in 2000 to 6.4 ppm in 2005. In spite of increased population, the following control measures have decreased CO concentrations. These permanent and enforceable control measures have

resulted in the air quality improvement in El Paso. The enforceable measures will remain in place for the duration of the initial maintenance period to ensure continued maintenance of the CO NAAQS in the El Paso area.

### **3.5.1 Oxygenated Fuels Program**

The El Paso Oxygenated Fuels Program, which began on October 1, 1992, requires that all gasoline in the area have a minimum oxygen content of 2.7 percent oxygen by weight from October 1 to March 31 of each year. Oxygenated fuel is conventional gasoline "splash blended" with an oxygenate to reduce CO emissions by promoting more complete combustion. Methanol, ethanol, methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), or tertiary amyl methyl ether (TAME) can be added to achieve a minimum oxygen content of 2.7 percent oxygen by weight.

### **3.5.2 Federal Motor Vehicle Emission Control Program**

The Federal Motor Vehicle Emission Control Program (FMVECP) which started in 1968 and was revised in 1994 and 2004, has dramatically reduced CO emissions through a continuing process of requiring manufacturers to produce new vehicles that meet increasingly tighter emission standards. As older, more polluting vehicles are replaced with newer vehicles, CO emissions in the El Paso area will continue to decline.

### **3.5.3 Vehicle Inspection and Maintenance (I/M) Program**

The Texas Vehicle Emissions Testing Program, also known as Air Check Texas, applies to vehicle owners in El Paso County and is integrated with the annual safety inspection program. Air Check Texas is implemented by TCEQ and operated by the Texas Department of Public Safety (DPS). Vehicles are tested annually either at a decentralized test-and-repair facility or at a test-only facility. Gasoline-powered vehicles from two through 24 years old are tested, beginning with the vehicle's second model year anniversary. Vehicles failing the test must be repaired and pass a retest or qualify for a waiver.

The current El Paso County emissions Inspection and Maintenance (I/M) program, originating in 1987, employs the Two-Speed Idle (TSI) and the on-board diagnostics (OBD) tests. All 1995 and older model year vehicles are required to pass the TSI test. The TSI test measures tailpipe exhaust emissions of CO, CO<sub>2</sub>, and hydrocarbons while the vehicle idles at both high and low speeds and then includes a gas cap integrity test. The EPA-approved OBD test is required for all 1996 model year and newer vehicles. The OBD is an emission test to check the vehicle's on-board computer that identifies problems with the vehicle's emission control components. A full description of the I/M program can be found in Section 5.4.2, On-road Source Control Strategies.

### **3.6 DOES THE AREA HAVE A FULLY APPROVED MAINTENANCE PLAN?**

An EPA memorandum dated September 4, 1992, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment*, allows states to submit a redesignation request and maintenance plan at the same time. Consequently, the TCEQ submitted both documents simultaneously. This maintenance plan revision will replace the maintenance plan submitted in January 2006. The maintenance plan process is discussed in Chapter 5 of this document.



## **CHAPTER 4: EL PASO CARBON MONOXIDE HOT SPOT ANALYSIS**

### **4.1 BACKGROUND**

In the past, CO concentrations in El Paso have exceeded the NAAQS for eight-hour average CO, and as a result the EPA designated a narrow strip of the city near the Rio Grande river as nonattainment for CO. However, as Figure 3-2 shows, there has been a substantial downward trend in the CO design value, which is defined as the second highest value in each two-year period. The design value has been below the standard every year since 1998.

### **4.2 REQUEST FOR REDESIGNATION**

Because there were no exceedances of the CO standard in the El Paso area for more than five years, the City of El Paso asked to be redesignated as attainment. The EPA recognized that the five years of monitoring data supported redesignation but requested additional modeling to address these specified concerns:

- The El Paso CO monitoring network has a limited number of sites, therefore, all of the hot spots in the El Paso area may not have been identified, and
- Urban growth may increase mobile emissions enough to cause NAAQS exceedances in the future.

In response to these concerns, TCEQ performed CO modeling at a heavily utilized intersection to demonstrate that CO exceedances are not currently occurring at a potential hot spot, and will not occur at that location in the future. The Cordova/Paisano intersection is just north of the International Bridge of the Americas and was designed to serve the heavy traffic leaving the United States border inspection area. The EPA agreed that modeling the mobile source emissions at the Cordova/Paisano intersection to determine the current and expected future CO concentrations would satisfy its concerns. The redesignation request and hot spot analysis was submitted to the EPA in January 2006. This revision includes updated modeling information to include 2020.

### **4.3 MODELING PROTOCOL**

The EPA approved the proposed modeling protocol on March 30, 2005 (*EPA Letter Approving the El Paso Modeling Protocol*), and the Cordova/Paisano intersection was selected for screening analysis. This intersection was one of six previously modeled for the El Paso Carbon Monoxide Modeling Report in accordance with *FCAA Section 818 Demonstration (1995)* submitted by the TCEQ to the EPA. This intersection is the largest in El Paso and is near the International Bridge of the Americas, which provides an entry point between El Paso and Juarez, Mexico.

### **4.4 CONCEPTUAL MODEL FOR CARBON MONOXIDE EVENTS**

El Paso CO events typically occur during the winter months, primarily in November, December, and January during the late evening hours with very light winds (wind speed < 3 one mile per hour (mph)). These events appear to be associated with near-stagnant conditions in local drainage flows in the urban basin. One hypothesis for this association is that urban CO emissions from both El Paso and Juarez are trapped under the nocturnal inversion, accumulating and circulating slowly in the basin. CO events build after the evening rush hour and end quickly, evidently terminated by a change in flow that carries the CO pool down the Rio Grande river valley to the southeast.

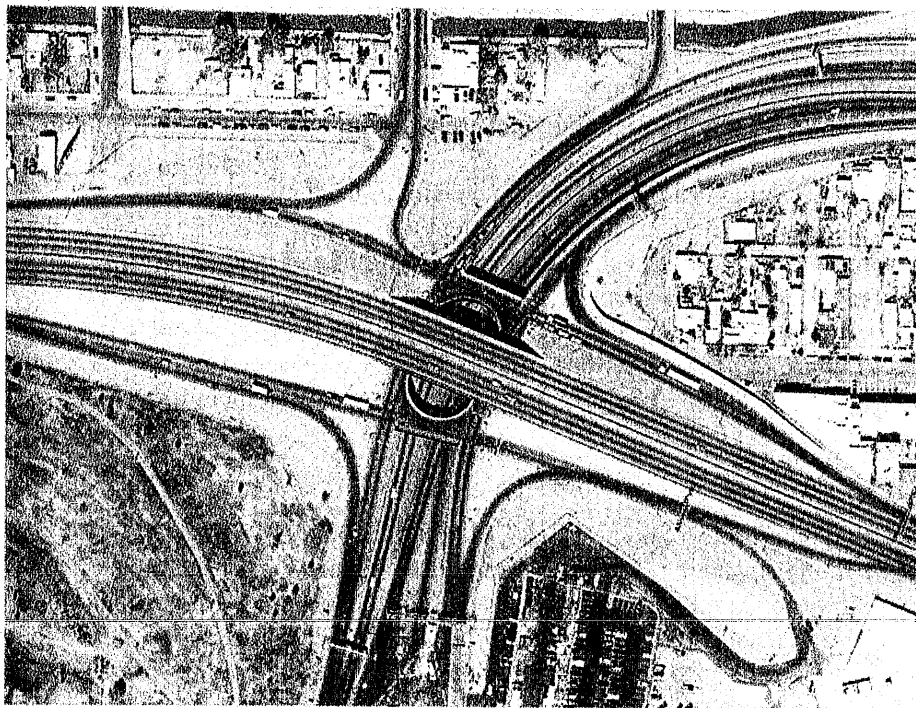
CO sources include domestic heating and urban traffic in both El Paso and Juarez. Evening rush hour traffic over the International Bridge is heavy in both directions, and cars may idle for extended periods waiting for border inspections. Historically, this traffic has been heavy during the evening hours on holiday weekends between Thanksgiving and Christmas. However, statistical analysis of recent data

suggests that CO events are just as likely to occur on weekdays as on weekends.

#### 4.5 THE CORDOVA/PAISANO INTERSECTION

Figure 4-1: *Photograph of Cordova/Paisano Intersection* shows a photograph of the Cordova/Paisano intersection used in this modeling. The intersection is a complex three-level roadway that accepts traffic from the International Bridge and routes it to the rest of the city. The International Bridge is not shown, but the U.S. customs area is evident at the bottom (south) end of the photograph. Vehicles leaving the customs area drive north via the underpass to join IH-10, which is off the photo to the northeast. Traffic traveling east and west uses the Paisano overpass. The middle layer (at ground level) includes the on-ramps, off-ramps, turn lanes, and traffic signals.

**Figure 4-1 Photograph of Cordova / Paisano Intersection**



#### 4.6 EPISODE SELECTION

The first step in episode selection is to identify the meteorological conditions associated with recent CO events. Because there have been no CO exceedances in recent years, a screening analysis was performed to identify enough days with relatively high CO concentrations to provide a statistical sample. El Paso data from 1995 through 2004 was screened to identify days with eight-hour CO concentrations greater than 75 percent of the standard ( $\text{CO} > 6.75 \text{ ppm}$ ). This episode selection protocol was approved by the EPA and remains applicable for the 2020 horizon-year projection.

A representative monitor was needed near the Cordova/Paisano intersection to reflect the factors that influence CO concentrations in the area. CO events appear to be terminated by fresh air flowing down the Rio Grande river valley. The Ascarate Park monitor (CAMS 37) was selected because it is downwind of the Cordova/Paisano intersection and has monitored higher CO concentration during recent years.



The screening process identified 15 days with relatively high CO concentrations at the Ascarate Park monitor. Table 4-1: *Recent Carbon Monoxide Events (Eight-Hour CO Concentrations > 6.75 ppm)* depicts the days chosen. Of these 15 days, the January 18, 2000, episode was selected for CO modeling because it was a relatively recent event (no events met the 6.75 ppm screening criteria in 2002 and 2003) and occurred on a non-holiday weekday. Additionally, January 18 was one of only two events with relatively high CO readings at both the Ascarate Park and Chamizal monitors, the two monitors nearest the International Bridge.

**Table 4-1: Recent Carbon Monoxide Events (Eight-Hour CO Concentrations > 6.75 ppm)**

Site Name	Date	Eight-Hour CO (ppm)	One-Hour CO (ppm)	Time (MST)
Ascarate Park Southeast (C37)	Thu 10/21/1999	8.63	11.6	21:00
Ascarate Park Southeast (C37)	Tue 12/28/1999	7.66	10.7	22:00
Ascarate Park Southeast (C37)	Wed 1/5/2000	7.01	15.0	19:00
Ascarate Park Southeast (C37)	Sun 1/16/2000	12.34	14.2	22:00
Ascarate Park Southeast (C37)	Mon 1/17/2000	7.85	13.0	00:00
Ascarate Park Southeast (C37)	Tue 1/18/2000	7.90	10.2	21:00
Ascarate Park Southeast (C37)	Wed 1/19/2000	6.98	15.6	21:00
Ascarate Park Southeast (C37)	Thu 1/20/2000	8.56	11.3	23:00
Ascarate Park Southeast (C37)	Mon 3/13/2000	8.75	16.8	22:00
Ascarate Park Southeast (C37)	Sun 12/24/2000	9.18	11.6	21:00
Ascarate Park Southeast (C37)	Mon 12/25/2000	7.28	11.9	01:00
Ascarate Park Southeast (C37)	Sat 2/3/2001	7.46	16.1	21:00
Ascarate Park Southeast (C37)	Wed 1/7/2004	7.63	7.6	20:00
Ascarate Park Southeast (C37)	Wed 11/3/2004	7.47	7.5	21:00
Ascarate Park Southeast (C37)	Sat 11/6/2004	7.40	7.4	20:00
Average		8.15	12.0	

During the January 18, 2000, CO episode, the Ascarate Park monitor measured a peak one-hour CO concentration of 10.2 ppm at 9:00 p.m. The Chamizal monitor measured a peak one-hour CO concentration of 10.7 ppm at 8:00 p.m. During the period of peak traffic (5:00 p.m.- 6:00 p.m. CST) the measured temperature was 69.7 degrees Fahrenheit and the average relative humidity was 28.5 percent at the Chamizal (CAMS 41) monitor operated by TCEQ, which is located less than one mile southwest of the Cordova/Paisano intersection. Winds during the episode were very light (averaging only one mph during

the CO event) and variable in direction.

#### **4.7 ESTIMATION OF ON-ROAD MOBILE CO EMISSION RATES**

Under contract with the TCEQ, TTI developed both "Summer Weekday" and "Winter Weekday" on-road mobile source EIs for the 1999, 2002, 2005, 2008, 2011, 2014, 2015, and 2020 calendar years. To model the January 18, 2000, "hot spot" episode day, the January/Winter 1999 MOBILE6.2 input files used by TTI were modified for application in January 2000. These input files include the effects of the Two-Speed Idle Inspection/Maintenance program, which was operating in January 2000. For the purposes of developing emission rates, the MOBILE6.2 model allows the user to model either January 1 or July 1 of a particular calendar year by specifying either 1 or 7, respectively, for the EVALUATION MONTH command. The January switch was used because CO events generally occur in the winter, and the episode selected was in January.

The temperature and humidity inputs for the hot spot analysis were designed to develop conservative emissions estimates and were based on a climatological analysis rather than the actual measurements at the Chamizal monitor during the episode. Temperature was conservatively set at 30 degrees Fahrenheit, because colder temperatures produce more CO. Relative humidity was set to 80 percent, which is not necessarily conservative but is representative for cold temperatures. The MOBILE6.2 model was used to estimate arterial, freeway, and idling emission rates. The average arterial and freeway speeds modeled were 40 and 50 mph, respectively. To calculate the idling emission rates, MOBILE6.2 was run at an average arterial speed of 2.5 mph, then the gram per mile output was multiplied by 2.5 mph to obtain gram per hour idling emission rates. This approach is recommended in Section 4.4.4, page 43 of the EPA's August 2004 *Technical Guidance on the Use of MOBILE6.2 for Emissions Inventory Preparation*.

The MOBILE6.2 AGGREGATED OUTPUT command was used in conjunction with the DATABASE OUTPUT option to obtain CO emission rates for each of the 28 vehicle types. Finally, a composite or "fleet wide" emission rate was obtained by weighting the individual emission rates by the relative VMT contribution of each vehicle type to the overall VMT total for the 5:00 p.m.- 6:00 p.m. time period from the TTI "Winter Weekday" analysis for 1999.

Mexican vehicle emissions were calculated separately. The same temperature, humidity, and average speed inputs referenced above were used to run the June 5, 2003, draft version of MOBILE6.2-Mexico, developed by Eastern Research Group (ERG) under contract with both the Western Governor's Association and the Binational Advisory Committee. Greater detail on use of this model can be found in an October 31, 2003, report entitled *MOBILE6-Mexico Documentation and User's Guide*. Various default inputs recommended in this report were followed for estimating emission rates from Mexican vehicles.

For the purposes of modeling the future case of January 2020, similar MOBILE6.2 inputs were used as described above. Other than the obvious calendar-year change, the I/M program modeled for the 2020 future case was the June 15, 2005, proposed OBD instead of the TSI program, which was modeled for the 2000 base case. All of the MOBILE6.2 and MOBILE6.2-Mexico input, output, reference, and spreadsheet files used for this analysis are provided in a compressed electronic file as Appendix D: *Emissions Inventory Calculations* to this document. The spreadsheets were intentionally structured so that final weighted emission rates could be estimated if the user wishes to determine the effects of alternate scenarios for temperature, humidity, average speed, and Mexican vehicle contribution.

#### **4.8 CALIFORNIA LINE MODEL VERSION 3 QUEUING COMPONENT FOR HOT SPOT CALCULATIONS (CAL3QHC) MODELING**

The EPA approved CAL3QHC as a screening tool for the prediction of CO at roadway intersections. The CAL3QHC model has components based upon the California Line Model version 3 (CAL3), which calculates dispersion from line sources. CAL3QHC also has a queuing component (Q) for hot spot calculations (HC). This SIP revision includes CAL3QHC modeling with realistic traffic volumes and conservative emissions and meteorological assumptions for the Cordova/Paisano intersection in El Paso.

Input variables and parameters for this screening analysis are described in the *User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections* (EPA-454/R-92-006 Revised). The CAL3QHC input and output files are included as Appendix E: *CAL3QHC Calculations for Base Case* to this SIP revision. The key inputs to this model are summarized here. The Cordova/Paisano link geometry is the same as used in the *El Paso Carbon Monoxide Modeling Report: Section 818 Demonstration* (1995). Traffic volume through the Cordova/Paisano interchange was provided by the City of El Paso and is included as Appendix F: *CAL3QHC Calculations for Future Case*. Traffic counts from 6:00 p.m. on a Friday evening (April 22, 2005) were used as representative of peak rush hour values. Signal phase information (total signal time and red time for different intersection links, for example) also came from the city.

Mobile emissions factors were calculated by MOBILE6.2 for an El Paso specific fleet distribution as well as for a Mexican fleet. Due to the close proximity of the Cordova/Paisano intersection to the U.S.-Mexico border, a conservative 50/50 split in VMT contribution from U.S. and Mexican vehicles was assumed. Consequently, the final CO emission rates that were input into the CAL3QHC model were weighted toward the higher emissions associated with the older Mexican fleet.

Conservative meteorological assumptions were also incorporated into the CAL3QHC modeling. Ambient temperatures were set to 30 degrees Fahrenheit. This temperature is close to the El Paso average low temperature for January and well below the actual temperature for the episode day. It is also consistent with the low temperature scenario contained in the 1995 SIP submittal.

Wind speeds of 1 meter per second (m/sec) (2.2 mph) were assumed, blowing from various directions in five degree increments. According to the User's Guide, CAL3QHC is not validated for wind speeds below the 1 m/sec threshold. Likewise, a more conservative mixing height of 100 meters is used rather than the default of 1000 meters. The default stability class of "E" was used for the transition between neutral conditions at dusk to the much more stable conditions occurring in the evening and early morning hours.

#### **4.9 RESULTS**

The maximum one-hour value calculated for CO for the current case in this screening analysis was 11.5 ppm based upon the conservative assumptions described above. This value is consistent with the maximum CO measured during the episode at the Chamizal and Ascarate Park monitors.

A persistence factor derived from the ratio of peak eight-hour average to peak one-hour average was used to convert this one-hour value to an eight-hour estimate. Using the persistence factor of 0.677 based upon data from the Ascarate Park monitor, the eight-hour concentration predicted from this screening was 7.8 ppm, which is below the 9 ppm eight-hour NAAQS for CO.

For the future case (2020) analysis, the traffic was increased according to the traffic demand modeling and

the emissions were adjusted to account for the newer fleet and I/M program upgrades. The same conservative emissions and meteorological factors were used. In the future case, the one-hour CO concentration was 2.9 ppm. The same persistence factor was used to convert the one-hour concentration to an eight-hour average. The future case predicted CO concentration was 2.0 ppm, well below the eight-hour NAAQS for CO.

**Table 4-2: El Paso Modeled Ascarate Park CO Hot Spot Concentration**

<b>Modeled Carbon Monoxide</b>	<b>One- Hour Concentration (ppm)</b>	<b>One-Hour - Eight-Hour Persistence Factor</b>	<b>Eight-Hour Concentration (ppm)</b>
Base Case	11.5	.677	7.8
Future Case	2.9	.677	2.0

#### **4.10 CONCLUSION**

This analysis confirms the current relationship between the measured CO concentrations and the trend line established by recent ambient air quality monitoring in the El Paso area. There has been a steady decline in CO levels and the El Paso area continues to be in compliance with the federal standard for CO.

Using EPA-approved modeling procedures and conservative methodology for the current case, the hot spot analysis indicates a maximum eight-hour CO concentration of 7.8 ppm, which is below the 9 ppm federal eight-hour standard.

A similar analysis was conducted for the 2020 future case. Based on the same conservative analysis, the eight-hour CO concentration at the Cordova/Paisano intersection is expected to be 2.0 ppm, which is below the federal standard.

The improvement in air quality in the El Paso area is likely attributed to the combination of a newer fleet, oxygenated fuels, and the I/M program. These programs are expected to continue to 2020, so the air quality in the El Paso area should continue to improve during the maintenance period.

## CHAPTER 5: MAINTENANCE PLAN (MP)

### 5.1 GENERAL

The maintenance plan must demonstrate that the CO standard will be attained for at least ten years from the date of the EPA's approval of the redesignation to attainment. The TCEQ submitted an attainment demonstration and redesignation request with a maintenance plan in January 2006, which will be replaced by the revised maintenance plan. This revision includes a commitment to submit a second ten-year maintenance plan two years before the end of the first ten-year maintenance plan period. This revised maintenance plan will ensure that the area remains in attainment of the CO standard, clarify the use of OBD testing as a control measure to improve air quality, and include emissions projections to horizon year 2020. El Paso area monitoring data show that the decline in CO levels meets the requirements.

This proposed revised maintenance plan contains provisions for continued operation of an EPA-approved air quality monitoring network in accordance with 40 CFR Part 58. The monitoring network serves to verify that CO levels in El Paso do not approach violation levels. To verify that the area remains in attainment, the TCEQ will continue to operate an appropriate air monitoring network. The locations of the CO monitors are shown in Figure 3-1: *El Paso County CO Monitor Locations*.

Under this plan, the TCEQ demonstrates maintenance of the CO NAAQS in the El Paso area through the year 2020. The maintenance demonstration consists of a comparison between the baseline EI (2002 seasonal) and the projected EI through the year 2020, taking into consideration growth in VMT, the economy, and population. Table 2-6: *El Paso County CO Emissions Inventory Baseline 2002 and Projections 2020* presents the projected emissions by category through 2020. The projected total EI shows emissions in 2020 are expected to be below the baseline EI.

### 5.2 ATTAINMENT INVENTORY

An EPA memorandum dated September 4, 1992, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment*, directs states to prepare an EI that is representative of attainment and includes the emissions during the time period associated with the monitoring data showing attainment. This inventory is referred to as the attainment inventory. The year 2002 was selected as the baseline year for El Paso CO redesignation. Table 2-1: *El Paso County CO 2002 Baseline Emissions Inventory*, presents the El Paso County CO emissions in 2002 by source type in tons per day. El Paso's CO monitored data for 2002 shows that the area was in attainment of the NAAQS as depicted in Table 3-1: *El Paso County CO Monitors With Eight-Hour Readings Greater Than NAAQS 1999-2005*.

### 5.3 MAINTENANCE DEMONSTRATION

EPA guidance allows for a state to demonstrate maintenance of a NAAQS by showing that future projected emissions are less than or equal to the attainment year inventory. The year 2020 is presented as the last year of the ten-year maintenance plan because it allows sufficient time for the EPA's processing of the revised maintenance plan. The TCEQ is required to complete and submit a revised maintenance plan to the EPA eight years after the EPA approves this maintenance plan. As with this initial ten-year plan, the second ten-year plan will be developed considering the latest emission factors, methodologies, and modeling techniques.

### **5.3.1 Projected Emissions inventories for 2020**

This maintenance plan consists of a comparison between the baseline EI (2002) and the projected EI through the year 2020, taking into consideration the point sources, area sources, non-road mobile, and on-road mobile sources. As presented in Table 2-6: *El Paso County CO Emissions Inventory Baseline (2002) and Projections for 2020*, the projected CO total emissions inventory for 2020 is below the 2002 baseline inventory. The total CO emissions for the baseline year (2002), is estimated at 427.33 tpd, while the emissions at the end of the maintenance plan period (2020) are estimated at 318.26 tpd.

## **5.4 CONTROL STRATEGIES**

The following are details of the committed control strategies for the various emissions sources.

### **5.4.1 Point and Area Source Control Strategies**

This maintenance plan does not include any new control strategies for point or area sources. Therefore, only emissions source projections are considered for the maintenance period.

### **5.4.2 On-road Source Control Strategies**

This maintenance plan includes the federal program as well as the TCEQ-established strategies to control emissions from on-road mobile sources, namely the oxygenated fuels program and the I/M program.

#### *Federal Emission Standards*

The FMVECP has dramatically reduced CO emissions through a continuing process of requiring manufacturers to produce new vehicles that meet increasingly tighter emission standards. As older, more polluting vehicles are replaced with newer vehicles, CO emissions in the El Paso area should continue to decline. Additional CO reductions are expected from Phase 1 of the Federal Spark Ignition Small Engine Rule. The anticipated reductions are incorporated into the calculation algorithm of the EPA's National Non-road Emissions Model (NNEM), version 2.2.

#### *Oxygenated Fuel Program*

The Oxygenated Fuels Program, which began on October 1, 1992, requires that all gasoline in the area have a minimum oxygen content of 2.75 oxygen by weight from October 1 to March 31 of each year. The El Paso Oxygenated Fuel Program is designed to help reduce CO emissions from the cold starts of motor vehicles during the winter months. Oxygenated fuel is conventional gasoline "splash blended" with an oxygenate such as methanol, ethanol, methyl tertiary butyl ether, ethyl tertiary butyl ether, or tertiary amyl methyl ether to achieve a minimum oxygen content of 2.75 oxygen by weight.

All gasoline storage, refining, and blending facilities; gasoline terminal and bulk plants; and gasoline transporters affected by this section are required to register with the TCEQ and the El Paso City-County Health District. The owner or operator of each affected facility must provide specific information and must update the information, as necessary, by September 1 of each year. Details of the oxygenated fuels program, including definitions, record keeping, and reporting requirements may be found in 30 TAC Chapter 114 Subchapter D: Oxygen Requirements for Gasoline.

[http://info.sos.state.tx.us/pls/pub/readtac\\$ext.TacPage?sl=R&app=9&p\\_dir=&p\\_rloc=&p\\_tloc=&p\\_ploc=&pg=1&p\\_tac=&ti=30&pt=1&ch=114&rl=100](http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=114&rl=100)

#### *Vehicle Inspection and Maintenance (I/M) Program*

All gasoline-powered vehicles two to twenty-four years old, registered and primarily operated in El Paso County are required to undergo an annual emissions test in conjunction with the annual safety inspection.

The El Paso I/M program has used the TSI testing for vehicles since January 1, 1987. The TSI testing program will continue to be used to test 1995 model year and older gasoline powered vehicles. An enhanced vehicle I/M program started on January 1, 2007, in El Paso County, testing all model year vehicles 1996 and newer, using the OBD testing. All vehicle emissions inspection stations in the El Paso program area will offer both tests. Emissions tests are conducted at public safety inspection stations. Details of the I/M program and rules may be found in 30 TAC Chapter 114 Subchapter C Division 1: Vehicle Inspection and Maintenance.

([http://info.sos.state.tx.us/pls/pub/readtac\\$ext.TacPage?sl=R&app=9&p\\_dir=&p\\_rloc=&p\\_tloc=&p\\_ploc=&pg=1&p\\_tac=&ti=30&pt=1&ch=114&rl=50](http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=114&rl=50)).

#### **5.4.3 Non-road Source Control Strategies**

For non-road sources, this maintenance plan relies on CO reductions expected from Phase 1 of the Federal Spark Ignition Small Engine Rule. The anticipated reductions are incorporated into the calculation algorithm of the EPA's National Non-road Emissions Model (NNEM), version 2.2.

### **5.5 MONITORING NETWORK**

To verify that the area remains in attainment for CO, the TCEQ will continue to operate an appropriate air monitoring network. Figure 3-1: *El Paso County Monitor Locations* shows a map of the El Paso area and the CO monitor locations. The monitoring data reveal any changes in the ambient air quality, and will help the TCEQ in determining if it is necessary to implement any contingency measures. The state will continue to work with the EPA through the air monitoring network review process, as required by 40 CFR Part 58, to determine: 1) the adequacy of the CO monitoring network; 2) the need for additional monitoring; and 3) when monitoring can be discontinued. Air monitoring data will continue to be quality-assured according to the requirements in the EPA regulations.

### **5.6 CONTINGENCY PLAN**

Section 175A of the FCAA requires that maintenance plans include contingency provisions. The purpose of the contingency plan is to assure that the cause of any violation of the NAAQS that occurs after the redesignation of the area to attainment will be corrected promptly.

#### **5.6.1 Contingency Measure Trigger**

If air quality monitoring data indicate that the CO NAAQS is violated (that is, more than one reading at the same monitor in one calendar year at or above 9.5 ppm), the TCEQ will analyze available data regarding the air quality, meteorology, international transport, and related activities in the area to determine the cause of the violation. If this analysis determines that the violation was caused by actions that cannot be controlled by regulatory actions within the jurisdiction of the TCEQ, such as emissions from Mexico, the TCEQ will notify the EPA of the findings. If, after this analysis is complete, it is determined that the violation was caused by actions that can be controlled by regulation, the TCEQ will develop measures identified in Section 5.6.2 or other equally appropriate measures that will reduce the CO levels to the extent necessary to comply with the NAAQS.

#### **5.6.2 Contingency Measures**

On December 4, 2002, the commission adopted a revision to the I/M SIP. This revision added OBD testing to the low-enhanced I/M program in El Paso County as a contingency measure to be implemented in the event such measures became necessary to maintain attainment of the CO NAAQS in the El Paso area. On October 26, 2005, the commission adopted revisions to the I/M program rules and SIP that added OBD testing as an active control measure to the established I/M program described in Section 5.3.3 and

withdrew OBD testing as a contingency measure for El Paso in the I/M SIP.

The implementation of potential contingency measures would not be expected to take place until well in the future, so the identification of specific detailed measures is not practical at this time. The TCEQ is committed to selecting the most appropriate contingency measures that can be timely implemented based on technological, societal, economic, and political factors that are impossible to predict.

Some of the measures that may be pursued or their equivalent, include:

- Vehicle Idling Restrictions to limit the amount of time vehicles are allowed to idle, thereby reducing the amount of CO produced during extended idling operations.
- Improved Vehicle I/M program to limit CO emissions through the use of future mobile source testing technology.
- Improved Traffic Control Measures to reduce the number of vehicles and the amount of time vehicles spend in traffic congestion.
- El Paso County has applied for and received a federal letter of authority to use Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding to start an aggressive vanpool program to reduce vehicle miles traveled by area residents. El Paso County reserves the option to explore the use of other Commute Solutions measures.

These measures, or other strategies that will reduce CO levels to bring the area into compliance with the NAAQS, will be proposed and implemented within 18 months of the commission publishing notification in the *Texas Register* of its determination that contingency measure action is necessary.



## APPENDICES AVAILABLE UPON REQUEST

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